LONDON-WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA9 | Central Chilterns

Bat trapping/radio tracking study - Mantles Wood (EC-008-002)

Ecology

November 2013

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High Speed Two (HS2) Limited,
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1 Introduction

1.1 The context for the current survey

1.1.1 Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive, was adopted in 1992. The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

1.1.2 The Conservation of Habitats and Species Regulations 2010 (as amended) (referred to as the 'Habitats Regulations') implement the Habitats Directive into national legislation. Regulation 41 seeks to protect certain species (European Protected Species) and contains a range of prohibitions that include deliberate capture or killing, deliberate disturbance and the deterioration or destruction of a breeding site or resting place of such an animal.

1.1.3 All species of bat are fully protected under the Habitats Regulation as European Protected Species through their inclusion on Schedule 2. In addition, certain species are Annex II species listed under the Directive, for which specific protection through the establishment of Special Areas of Conservation (SAC) applies. Several species of bat are also species of principal importance in England as identified in Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006)[1].

1.1.4 Construction of the Chiltern Tunnel north portal of the Proposed Scheme will remove and fragment habitat from Mantles Wood. This fragmentation and isolation will restrict the movement of animals such as bats, between the remaining woods which, over time, could alter the composition of the bat assemblage.

1.1.5 Accordingly detailed surveys were carried out in the land adjacent to Mantles Wood in order to determine the species and numbers of bats using the wood and its surrounding areas, and to more accurately define the impacts of the Proposed Scheme on the assemblage of bats and, if necessary, to inform appropriate mitigation. Permission to carry out surveys within Mantles Wood itself was not granted.

1.2 Site Context and Status

1.2.1 Mantles Wood is designated as a Local Wildlife Site (LWS). The wood is replanted conifer plantation (17.1ha, 85%) a small portion of which is ancient woodland, with a poor understorey of woodland species. In the north-western part of the wood there remain three small areas, totalling 3.2ha (15%), of semi-natural broadleaved ancient woodland.

[1] Natural Environment and Rural Communities Act 2006 (Chapter 16).London. Her Majesty's Stationery Office.

1.2.2 Mantles Wood is connected to adjacent woodlands, including Farthings Wood and Hedgemoor Wood, via hedgerows and lines of trees, and is part of the wider landscape of woodland and agricultural land that is dominant in the area.

1.3 Project aims and approach

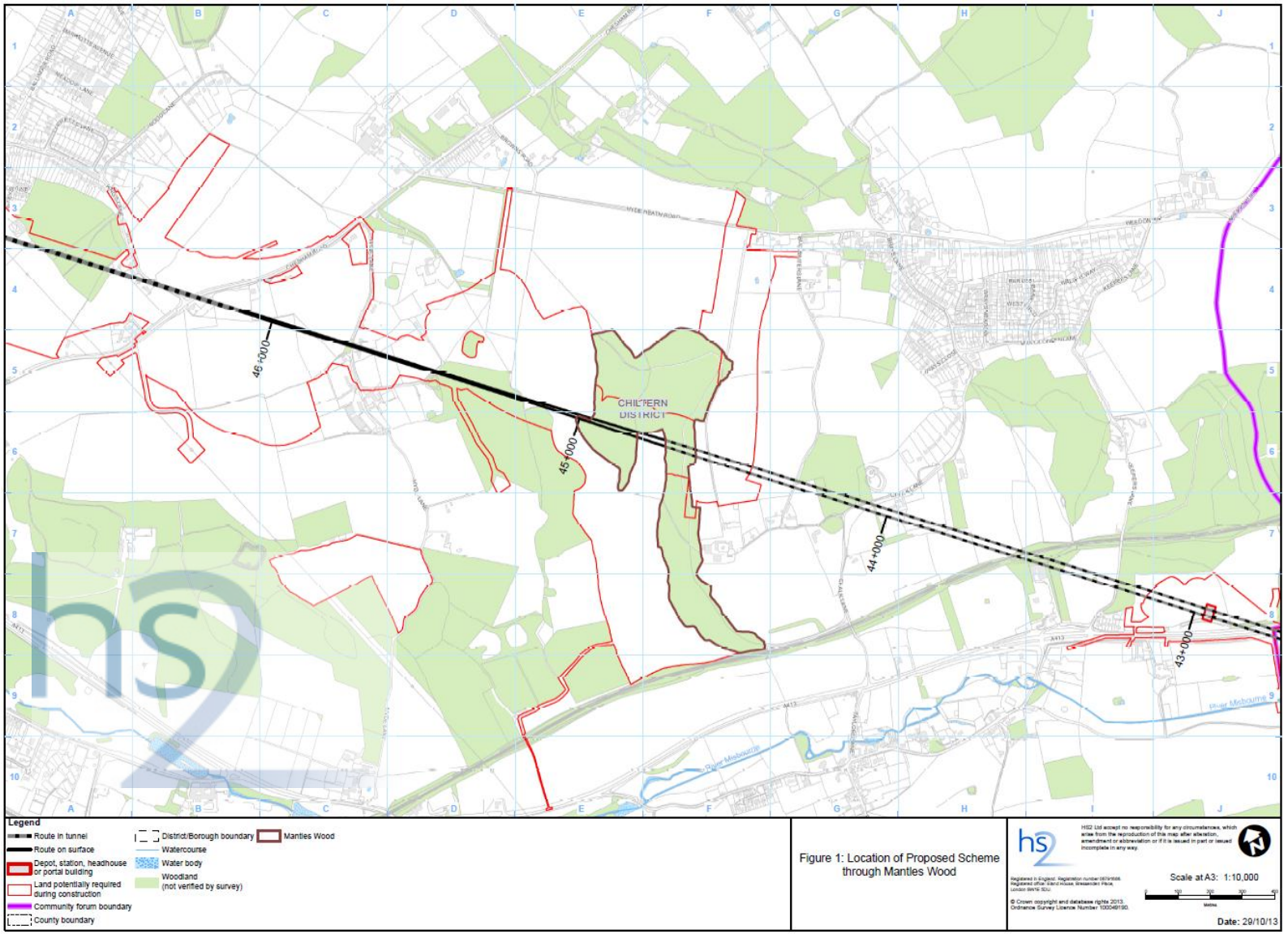
1.3.1 The surveys were designed to obtain robust baseline data on bat species, particularly woodland bats, which may be using Mantles Wood.

1.3.2 A variety of survey techniques, comprising: activity transects, automated ultrasound surveys, tree assessments (including climbed inspections) and trapping surveys were used to identify:

- the species and numbers of bats present;
- the location and type of any roost; and
- commuting routes for these species within the landscape.

1.3.3 These data were required to assess the impacts of the construction and operation of the Proposed Scheme and the resultant loss of woodland and habitat fragmentation, and to establish the mitigation measures that should be implemented, should they be required. The location of the tunnel portal and the vertical alignment of the Proposed Scheme are shown in Figure 1. All trapping was carried out under a site specific annex to Dr Stephanie Murphy's licence (ref number 20130854) valid from 3 June 2013 to 30 September 2013.

Figure 1: Location of Proposed Scheme through Mantles Wood



2 Methodology

2.1 Survey area

2.1.1 The survey area for both trapping and automated recording was along the perimeter of Mantles Wood (Ordnance Survey (OS) National Grid Reference SP 922 003) near Hyde Heath, Buckinghamshire. The woodland occupies approximately 25ha and it is located in a predominantly arable landscape with several other woodlands nearby. All trapping and automated ultrasound recording stations were located in this survey area. The transect route, as described below, was also situated within the same survey area.

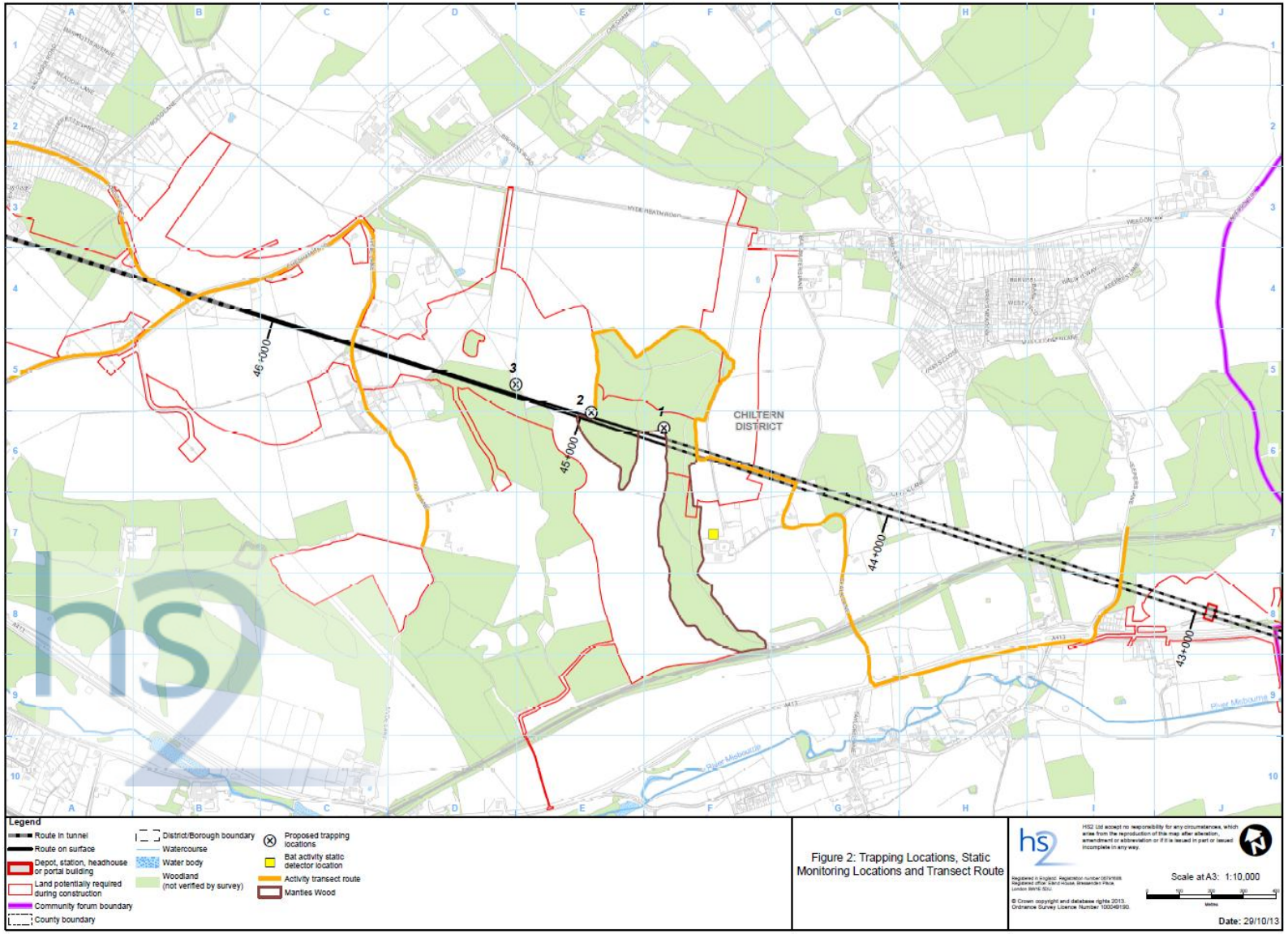
2.1.2 The bat transect route followed the perimeter of the woodland where this is bounded by Mantles Farm to the east, north and west. The route began to the south-east of the woodland on Chalk Lane, where this crosses beneath an existing rail bridge (approximate OS National Grid Reference SP 924 993), and continued, across an arable field, before terminating at approximately SP 920 003. The route was approximately 2.5km long (see Figure 2).

2.2 Automated Surveys

2.2.1 One SM2 Bat+ detector was placed on the eastern perimeter of Mantles Wood (see Figure 2) in an area that was considered likely, based on the analysis of aerial photographs and OS maps, to support bat activity. The automated surveys were carried out over 7-23 May, 11-18 June and 17-24 July 2013. The detector was set up to record for two and a half hours commencing 15 minutes prior to sunset and for two and a half hours before sunrise.

2.2.2 Analysis of the Zero Crossed files was undertaken using Analook V3.5 to the appropriate level for each species group.

Figure 2: Trapping locations, static monitoring locations and transect route



2.3 Transect Surveys

2.3.1 Seven bat activity transect surveys were carried out along the 2.5km long route (see Figure 2). The route was designed to take in key habitat and landscape features of value for bats. All surveys were undertaken for approximately two and a half hours after sunset. The transect was repeated on seven occasions between April and July (see Table 1). Surveyors used SM2 Bat+ detectors in conjunction with Bat Box Duet detectors connected to Edirol digital recorders.

Table 1: Transect survey dates April to July 2013

Survey date	Dusk/dawn
17 April 2013	Dusk
22 May 2013	Dusk
23 May 2013	Dawn
11 June 2013	Dusk
12 June 2013	Dawn
22 July 2013	Dusk
23 July 2013	Dawn

2.4 Trapping surveys

2.4.1 Trapping surveys were carried out at three different locations within Mantles Farm enabling surveyors to capture bats in close proximity to the wood. The surveys took place on 6 June, 12 August and 5 September 2013. The survey dates were chosen to provide data that are evenly distributed across the active season but avoid the sensitive maternity period of mid-June to mid-July.

2.4.2 Three harp traps, each of which was combined with an acoustic lure, were used on each of the three surveys. The locations of the three traps was (i) in a central location within a cluttered woodland habitat; (ii) within edge habitat on the western margin of Mantles Wood; and (iii) edge habitat on the eastern margin of Farthings Wood (See Figure 2).

2.4.3 The acoustic lure attracts bats to the traps by producing simulations of a variety of their social calls. This was used to increase the probability of capturing target woodland bat species, including Bechstein's bat, brown long-eared bat, Natterer's bat and Brandt's bat, which potentially could be affected by the construction of the tunnel portal in this area. The survey aimed to radio-track bats of these genera, to identify roosting and foraging locations, should these species be captured during the trapping assessment.

2.4.4 The surveys were carried out in suitable weather and temperature conditions, commenced at sunset, and lasted four to six hours on each survey night.

2.4.5 Bats captured in the harp traps were removed by a suitably experienced and licensed ecologist (or under the direction of a licensed bat ecologist) and transferred to a clean

cloth bag. At the end of each trapping sessions biometric information was obtained from all bats captured. The sex, weight (using a light line spring scale (Pesola)), forearm length (measured using digital callipers (Sealey S0707)) and reproductive status were ascertained and any other general health observations noted. The bats were released immediately in close proximity to the site of capture during the hours of darkness.

2.5 Climbed Tree Inspections

2.5.1 Access to Mantles Wood had been refused and thus prevented surveys from targeting those trees within the wood itself. A ground based assessment, however, identified 19 trees with potential to support roosting bats in the immediate vicinity of the wood. The assessment used close focusing binoculars and a high powered torch. Where potential roost features were identified, evidence of roosting bats, including droppings, feeding remains such as moth wings, scratch marks around suitable crevices and urine and fur oil stains, was searched for.

2.5.2 Any trees with features that were assessed as potentially supporting roosting bats but that were beyond the reach of a ground based survey were climbed in order to closely inspect those features. Endoscopes and torches were used to explore the extent of any cavities. Care was taken when using an endoscope to avoid unnecessary disturbance to bats roosting within features being inspected.

2.6 Constraints

2.6.1 It was not possible to access the inside of Mantles Wood owing to restrictions. Survey work was possible, however, at the woodland perimeter.

3 Results

3.1 Data search

3.1.1 Records of bats from NBBG, SBBG and BMERC returned records of at least six bat species, as well as those for the Pipistrellus genus and unidentified species. Those identified to species level were:

- common pipistrelle (Pipistrellus pipistrellus);
- soprano pipistrelle (Pipistrellus pygmaeus);
- Daubenton's bat (Myotis daubentonii);
- Natterer's bat (Myotis natterii);
- noctule (Nyctalus noctula); and
- brown long-eared bat (Plecotus auritus).

3.1.2 Fifty-nine bat records were returned from locations within 5km of Mantles Wood, the most frequent of which were for common pipistrelle. There is one record of a roost 3.4km to the north of Mantles Wood but the genus was not identified; the remainder of the records returned comprised sightings of bats in flight. Full data search results are given in Table 2.

Table 2: Biometric data for bats caught

Date	Bat number	Location	Grid reference	Species	Sex	Repro status	Weight (g)	Forearm (mm)
6 June 2013	1	1	SP 922	P.pipistrellus	F	Pregnant	5.5	31.09
5 September 2013	2	3	SP919	P.auritus	M	Juvenile	7	38.04
5 September 2013	3	3	SP 919	P.pipistrellus	M	Juvenile	4	30.46
5 September 2013	4	4	SP 919	P.pygmaeus	M	Juvenile	4.5	30.59
5 September 2013	5	5	SP 919	P.pipistrellus	F	Juvenile	4	30.09
5 September 2013	6	6	SP 919	P.pipistrellus	M	adult	5.5	31.44

3.1.3 In 2011, surveys carried out by the Chilterns Conservation Board recorded common pipistrelle and soprano pipistrelle at Mantles Wood and the adjacent Hedgemoor Wood.

3.2 Automated Surveys

3.2.1 The survey periods during May and June 2013 returned no bat passes, indicating there was no bat activity in the immediate vicinity of the detector. During July at least four species were recorded, comprising noctule, common pipistrelle, soprano pipistrelle, Myotis sp.and Pipistrellus sp. Table 3 summarises the results of the July sampling period.

Table 3: July 2013 results

Species	Peak passes per night
Myotis species	1
Noctule	1
Common pipistrelle	206
Soprano pipistrelle	1
Pipistrellus species	20
Total	**229**

3.3 Transect Survey

3.3.1 At least three species of bat were recorded and/or observed in flight during the activity transects. The dominant species observed during activity transects was common pipistrelle, with peak counts occurring in April and May (24 and 17 passes per night respectively) and recorded across the transect route. In addition a single soprano pipistrelle pass was recorded in May and three Nyctalus/Eptesicus bat species passes were recorded in July.

3.3.2 Peak levels of foraging common pipistrelle were recorded on the perimeter of Mantles Wood and over an arable field of the neighbouring Mantles Farm. Overall, however, the numbers of foraging common pipistrelle recorded were low.

3.4 Trapping

3.4.1 Bats were captured on two of the three trapping nights, 6 June and 5 September. A total of six bats of three species were caught, comprising four common pipistrelles (two males and two females), one male soprano pipistrelle and one male brown long-eared bat. The biometric data for all bats caught is detailed in Table 2.

3.5 Radio-tracking

3.5.1 Only a single target species, the brown long-eared bat, was captured and this individual was not radio-tagged as it was an underweight juvenile male.

3.6 Climbed Tree Inspections

3.6.1 A total of 21 trees were subject to a ground-based inspection on 19 and 26 July 2012. Two of these trees were assessed to have negligible potential and were, therefore, not subject to any further surveys. The remaining 19 trees were climbed and inspected on 18 February 2013. No roosts were confirmed in any of the 19 trees climbed and inspected. Of these trees, nine were assessed as having negligible potential to support roosting bats, and nine with low potential, and one with moderate potential.

3.6.2 The tree assessed as having moderate potential to support roosting bats, a mature pedunculate oak Quercus robur, was situated on a boundary lined with mature trees approximately 300m east of Mantles Wood. The tree comprised three features of

potential value to bats, two trunk cavities and one callous roll, but no evidence that these features had or were being used by bats was recorded.

4 Discussion

4.1.1 A limited number of bat species were recorded commuting and foraging in low to moderate levels of activity within the vicinity of Mantles Wood. It is assumed that this assemblage is representative of the species that may be present within the Woodland itself.

4.1.2 By far the most abundant species recorded was the common pipistrelle, a species that is described by the Bat Conservation Trust (BCT 2011) as being widely distributed across the UK and one of Britain's commonest species. Even this species, however, was recorded at relatively low numbers compared with those recorded from other surveys related to the Proposed Scheme elsewhere along its route. Three species of principal importance in England, the soprano pipistrelle, the brown long-eared bat and the noctule, were recorded but in very low numbers. The soprano pipistrelle is widely distributed across the UK and with the common pipistrelle is one of our most common bats. The brown long-eared bat is similarly described as common and is widely distributed whereas the noctule is described as uncommon.

4.1.3 *Myotis* species, other *Pipistrellus* species and undetermined species were also recorded, but in extremely low numbers. No bat roosts were identified from any of the surveys.

5 References

Battersby, J. (Ed) & Tracking Mammals Partnership, (2005), *UK Mammals: Species Status and Population Trends. First Report by the Tracking Mammals Partnership.* JNCC/Tracking Mammals Partnership, Peterborough.

BCT, (2011), *The state of the UK's bats.* Bat Conservation Trust, London

BCT, (2012), *National Bat Monitoring Programme – Annual Report 2011*. Bat Conservation Trust, London.

Russ, J. (2012), *British Bat Calls: A Guide to Species Identification*. Pelagic Publishing, Exeter.